Resource Efficiency and the Energy-related (ErP) Directive

Future Options

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RESOURCE EFFICIENCY AND THE ENERGY-RELATED (ErP) DIRECTIVE – FUTURE OPTIONS

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European Union (EU) policy documents are referring to the ErP Directive as a potential instrument for better resource efficiency. This briefing discusses the scope of the Directive, how it is currently applied, and the potential for better addressing resource efficiency, recycling and functional aspects with the framework of the Directive.

1. ADDRESSING RESOURCE EFFICIENCY

1.1 Focus on resource efficiency

The current economic downturn was not triggered by a lack of resources, but the next one could very well be, as limits to resources may slow down future economic growth [1]. Due to a number of coinciding circumstances - including fears of resource scarcity and escalating prices - resource security and resource efficiency are currently hot topics on the policy agenda both in the European Union (EU) and internationally.

Resource use entails the extraction and processing of both renewable and non-renewable resources. An increasing use of natural resources puts even more pressure on ecosystems, limiting their long-term resilience. Resource use is highly connected to a number of current ecological threats, most notably deforestation and reduced biodiversity. It is also claimed that climate change and resource overexploitation are two sides of the same coin [2] Various environmental policies, enacted with the best intentions, may have undesired effects on resource use, the most well-known example being the discussion on whether policies that promote bio fuels may cause deforestation and reinforce food shortages.

Natural resources may be traded like other commodities, but some important "strategic" resources - such as rare metals used in electronics and batteries - are unlike other commodities in the sense that they are produced in limited quantities, in few places, and therefore buyers have limited options to change the supply base. Both nations and corporations have started to analyze how access to these vital future resources can be secured, as conflicts related to the extraction and distribution of these resources are expected to increase.

1.2 Need for policies

For these reasons, we need to develop policies that can secure a stable, conflict-free access to resources, including rare metals, for all relevant actors. Policies must also help in providing a fairer global distribution of resources between different regions and countries [3] as poorer countries use a small fraction of current resources. Further, dirty extraction processes are often located in poorer countries, where the waste levels are raising, and this needs to be addressed through improved international cooperation.

As many developing countries will need to increase their resource use in the short term, developed countries must urgently adopt progressive approaches to decrease resource use. The challenge is enormous, as the demand for raw materials is expected to double or even triple within the next 10-15 years [2]. There is a need for progressive policies, both to limit material use and to close the loops , e.g. urban mining.

Achieving the overall objectives for a more sustainable regime for natural resources will require a large number of measures at various levels (international, regional, national, and local) [2,4]. International agreements, sustainability standards and certification schemes for product chains, and mandated limits to resource consumption are among proposed measures. Better pricing of resources and ecosystem services, where all external effects are taken into account, as well as improved recycling methods and techniques, are all crucial elements of an effective policy mix.

1.3 EU proposals

The European Union has initiated several policy initiatives to deal with the issues.[1] Important initiatives include the Thematic Strategy on the Sustainable Use of Natural Resources, and the Thematic Strategy on Waste Prevention and Recycling. There are also a number of other strategies and policies that entail elements related to resource use, such as the Integrated Product Policy (IPP), and the Environmental Technologies Action Plan (ETAP).

The Raw Materials Initiative was launched in 2008 [5]. It primarily proposes a more targeted use of existing policies and instruments. The Commission is expected to launch a Road-map for improved resource efficiency in mid-2011, which will probably outline concrete measures to be taken. The Belgian presidency has put renewed efforts into developing a strategy for sustainable materials management. In a policy paper from July 2010, a number of strategies are proposed [6]. The most relevant ones, with high potential overlaps with measures undertaken under the scope of the ErP Directive, are 'selective waste collection and recycling', 're-use and repair', 'ecodesign', and 'product service systems'.

There are some potential problems with the proposed strategies. First of all, they are as yet quite vague, and in many cases they provide few details on the way forward. This implies that it will take some time before concrete measures are on the table, not to mention decided upon. There are also few suggestions on legally binding measures. Further, the track record regarding enforcement of current rules and strategies on waste collection and recycling are rather poor [7, 8] and little progress has been made in the area of resource efficiency [9].

Absent from current policies are also issues relating to dangerous chemicals in articles and materials. There is a need to better merge natural resource and chemicals policy, for several reasons. Good chemical management practices can decrease the use of resources, and an integrated strategy would reduce the risk of conflicts between different targets. Further, information and knowledge about dangerous chemicals will make it easier to recycle and re-use articles and materials. EU has not managed to develop a strong coherent strategy for addressing chemicals in articles, and the information provided to consumers and other relevant actors – such as professional purchasers in the private and public sectors – are inadequate [10, 11]. Neither REACH nor the ErP Directive has been very effective in addressing chemicals in articles. Current legislative proposals in California could see them move ahead of EU in this respect [12].

[1] In this paper we do not make a specific distinction between policies aimed at "sustainable management of natural resources" and policies aiming at "sustainable material use". The two concepts are widely over-lapping [6].

2. THE ErP DIRECTIVE: WHAT IS THE POTENTIAL FOR REGULATING RESOURCE EFFICIECNCY?

2.1 The ErP Directive and resource efficiency

Several policy documents make references to the ErP Directive as a key tool for improving resource efficiency. In the Presidency's Summary of the Informal Environment Council on Sustainable Materials Management, 12th and 13th July 2010, it was stated "*The review of the EU Ecodesign Directive in 2012 must form the basis for a comprehensive European policy on ecological design, covering the resource intensive products, taking into account all relevant environmental criteria across the life-cycle and life-cycle resource requirements (material, water, energy and land). For instance, more attention should be paid to the reusability or recyclability of products.*" [13].

The policy paper distributed before the meeting mentioned the ErP directive in several places, e.g.: "*Some ways in which policy could further support ecodesign are: Extend the scope of the EU Ecodesign Directive, include SMM related criteria (resource efficiency, re-usability, etc.), and provide for mandatory supply of product data by companies and sectors in order to monitor progress.*"; and *"Some ways in which policy could further support re-use and repair are: … Integrate reusability criteria in e.g. the EU Ecodesign Directive."* [6].

2.2 The scope of the ErP Directive

It is unclear what the recommendations to extend the scope of the ErP Directive really mean. First of all, certain parts of the life cycle of ErP's are excluded as the definition of "life cycle" provided in the ErP Directive (Article 2) only cover the phases from raw material use to final disposal. Thus, the early phases of the life cycle – e.g. raw materials extraction – are out of the scope of the Directive and implementing measures. This was discussed during the legislative processes [11]. Many actors stressed for a broader definition of life cycle but this was problematic from both a legal and political perspective. Legally, a broader definition of life cycle would open up the

potential for regulating so called processing and production methods (PPMs). Whether regulating PPMs is possible or not – due to the potential conflicts with WTO-administered agreements – have been the subject of much discussion. But even if such measures would be deemed legal, they are of course questionable from a political perspective due the tensions that they would create among governments.

2.3 Regulating the early phases of the product life cycle

We may conclude that the early phases of the life cycle cannot be regulated directly by implementing measures. Further restrictions are provided through different wordings throughout the ErP Directive [11]. For instance, in Annex I it is stated that ecodesign parameters identified should "*relate to product design*". Thus, early phases of the life cycle can only be addressed "indirectly"; requirements on product design may in some cases have implications also for earlier life cycle phases. The choice of materials used is very much linked to the early life cycle phases. Thus, implementing measures that lead to new types of material uses, or higher recycling levels will be of importance as they will influence early stages of the life cycle in different ways.

We may conclude that a future "broadening the scope of the ErP Directive" will most likely not include a broadening of the definition of "life cycle" given, to include earlier life cycle phases. This means that the ErP Directive must probably be complemented by other (mandatory and/or voluntary) policies that promote environmental improvements in the early part of the life cycle, unless requirements can be designed in such a way that they influence processing and production methods – which is unlikely in most cases. Such policies may include certification schemes or international agreements. It has also been argued that current WTO rules – which treats extraction and production processes as trade neutral - must be reviewed [2].

2.4 Mandate given in the ErP Directive

Absolute limits to resource use may be necessary in the long run. The ErP Directive can obviously not be the main strategy for achieving this, though it can be one of the tools that will promote resource efficiency and dematerialization.

The next question concerns what mandate the ErP Directive provides for addressing resource use and materials. In principle, the directive provides the necessary scope for regulating a number of parameters that could lead to improved resource efficiency, such as raw material selection and use, materials choices, re-use and recyclability, various information to waste treatment facilities, consumption of resources, information about dangerous substances, and so on.

2.5 Practical application of the ErP Directive

While the Directive may provide the necessary base to address resource efficiency, implemented measures have so far tended to focus rather narrowly on energy consumption during use [14, 15]. Not only are other environmental aspects (toxicity, material use etc.) often neglected, but also *energy embedded in materials seems to be a neglected issue*. There are several reasons for this state of affairs. Firstly, energy during use is perceived as an important aspect, not least due to its correlation to greenhouse gas (GHG) emissions (though energy embedded in materials seems to get less attention despite their links to GHG emissions). Secondly, energy during use is an easier parameter to deal with than many other environmental aspects (toxicity, recyclability) because there are established practices and standards for measurement, and often numerical values that can be used. Thirdly, as there are existing regulations covering chemicals (REACH, RoHS Directive) and waste (WEEE Directive), the easy way out is to refer to these regulations rather than to analyze if they cover the important issues for the relevant product group. The fact that the mentioned regulations have had very limited impact on ecodesign practices is seldom noticed. Fourthly, the choice of life span and the scoping seems to influence the results in some cases. For instance, in the case of PCs and TVs, it appears as if many special chemicals (requiring high purity levels which in turn require substantial energy demand) and processes in semiconductor manufacturing are not included in the assessment of the manufacturing phase of the product life cycle [14]. Further, the choice of product life length in the study made when setting implementing measures (6.5 years) was much longer than employed in another study (3 years) [16]. The outcome of different methodological choices clearly affects the importance of the use phase vs. other phases.

Another concern is that default scenarios for recycling rates, which do not take into consideration overall collection rates) of materials have been applied in some cases; it is likely that incorporating actual collection rates in the calculations would show environmental impacts from the end-of-life life cycle phase to be much more important than currently established [14].

Thus, it appears as if there are possibilities to better address resource use and materials within the scope of the ErP Directive, but there are several explanations to why this is not happening.

3. THE WAY FORWARD

How could a specific implementing measure that relate to resource use and materials look like? Specific implementing measures (except those relating to energy and water efficiency during use) are often difficult to apply[2] as they must be designed so they do not hinder new innovative approaches, or have undesired side effects. Some specific measure should however be possible, e.g. banning the use of certain materials in products (in order to facilitate recycling, or protect scarce resources), or certain stipulations on recycled content.

However, generic requirements should be a better - or at least easier - way forward in most cases. Such requirements could - inter alia - force manufacturers to: account for raw materials selection and use, relevant design solutions (e.g. design for recycling), provide information about chemicals to recyclers and consumers, and so on.

A couple of issues need to be discussed in connection to such requirements. First of all, the legality of such requirements needs to be analyzed. Are they specific enough? Will the manufacturer know exactly what is expected? Secondly, the manufacturer needs guidance in how to perform the analysis, and to be able to provide evidence of compliance. Relevant standards may need to be developed for these purposes.

Some relevant standards exist. For instance, IEEE 1680 – EPEAT is a standard (for personal computers and monitors) or soon to be family of standards (other electronics to be considered) that includes a measurement standard for determining whether a product meets design for shredding criteria in EPEAT.[3] ECMA has launched ECMA-341 "Environmental Design Considerations for ICT & CE Products". IEC has a number of existing standards of relevance, both relating to guidance and compliance with requirements, e.g.:

- IEC 62430. Environmentally conscious design for electrical and electronic products
- DD IEC/PAS 62545:2008. Environmental information on electrical and electronic equipment (EIEEE)

More IEC standards are under preparation, e.g.:

- IEC 62474. Material declaration for products of and for the electro technical industry
- IEC/TS 62650. End of Life information exchange for electro technical equipment between manufacturers and recyclers

Not all of these standards can be used in the context of the ErP Directive due to European standardization policy [17]. The IEC standards can however be applied. There might be a need to develop additional standards, however. Further, while there are an increasing number of standards for electronics, the revised ErP Directive will regulate a large number of other product groups, which means that standards must be developed also for these products.

Thus, new standards developed by European Standards Organisations (ESOs) – and/or IEC and other relevant bodies - may be a prerequisite for an extended use of generic requirements relating to natural resources and materials.

However, also other issues need to be considered. The largest potential contribution of the ErP Directive to resource efficiency stem from functional considerations. There are already possibilities to replace traditional ICT equipment with new solutions, e.g. so-called "thin clients" in case of computers. However, both for legal and political reasons, it is probably impossible to demand such solutions be used. More interesting is perhaps discussions in relation to functional integration. This suggests that more efforts should be made to promote compatibility between products - which may include both hardware and software - and provide integrated functions. For instance, DVDs could be integrated in TVs; it must be easy for consumers to use a laptop or a PC as a TV, etc. However, it is not always possible – or desirable – to legislate about such solutions. There may be a

[2] There is however a need to evaluate current practices and the applicability of relevant standards, e.g. EPEAT's IEEE 1680.

[3] In order to satisfy this requirement manufacturers must eliminate the use of paint or coatings that are not compatible with recycling or reuse. The specific product criterion states that: Plastic parts > 100g on a product shall not contain paints or coatings that are not compatible with recycling or reuse, including metal coatings. EPEAT defines compatible in this context as the following: Paints and coatings on plastic parts are proven to be compatible with recycling processes if they do not significantly impact the physical/mechanical properties of the recycled resin. Significant impact is defined as >25% reduction in notched Izod impact at room temperature as measured using ASTM D256.

need to develop standards and procedures to assist regulators and designers in such matters.[4]

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[4] IEC 62430 includes some relevant provisions, and also stress the importance of "[taking] into account the effects of impending regulatory requirements, changes to related product families and advances in technology or the projected availability of devices with competing functionality" (A.2, d).

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